IOWA FOREST PEST SURVEY

1989

Iowa Department of Natural Resources

Division of Forestry

Wendy Bantz

Insect and Disease Intern

INTRODUCTION

1989 is the ninth year that the Iowa Department of Natural Resources has offered a pest management summer internship. The position was created to provide practical forest pest management experience to an undergraduate at Iowa State University. This experience has been very worthwhile to me, and has added a great deal to the knowledge I have already obtained at Iowa State University. I hope the information presented in this report will be beneficial to my employer.

INTERN OBSERVATIONS

The year of 1989 was again an unusually dry year. Although more rainfall occurred this year than last, the amounts were less than normal. The lack of precipitation and other affects of climate have put many of Iowa's trees under stress. This has left many more susceptible to insect and disease problems. Some diseases, such as oak wilt, were seen in greater numbers, but these numbers were less than expected considering last year's conditions.

The drought conditions alone were responsible for tree decline and death. In windbreaks especially, many pines,

spruces, and cedars all across the state showed symptoms of stress and death due to last year's dry conditions. Many of the Conservation Reserve Program acres that were planted this year and last were off to a rough start due to lack of adequate soil moisture.

This year we may have seen an increase in insect and disease problems. They were, however, not as bad as some expected to see. The results of the past two dry years may not be fully seen until following years. Therefore, it is important for surveillance of Iowa's forested areas to continue.

WALNUT CANKER SURVEY

As insect and disease intern, I spent most of the first two months involved with a survey of stem canker on plantation black walnut. This cooperative survey, including Iowa, Wisconsin, Minnesota, Illinois, and Missouri, was designed to determine the occurrence of this canker, caused by the fungus Fusarium sporotrichoides. This particular fungus caused cankers in both Wisconsin and Minnesota. Two different species of the fungus were found in Illinois and Missouri. This canker occurs in greater numbers in valleys and along stream beds. Pruning practices and the ambrosia beetle, Xylosandrus germanus, are thought to be associated with the occurrence of the canker.

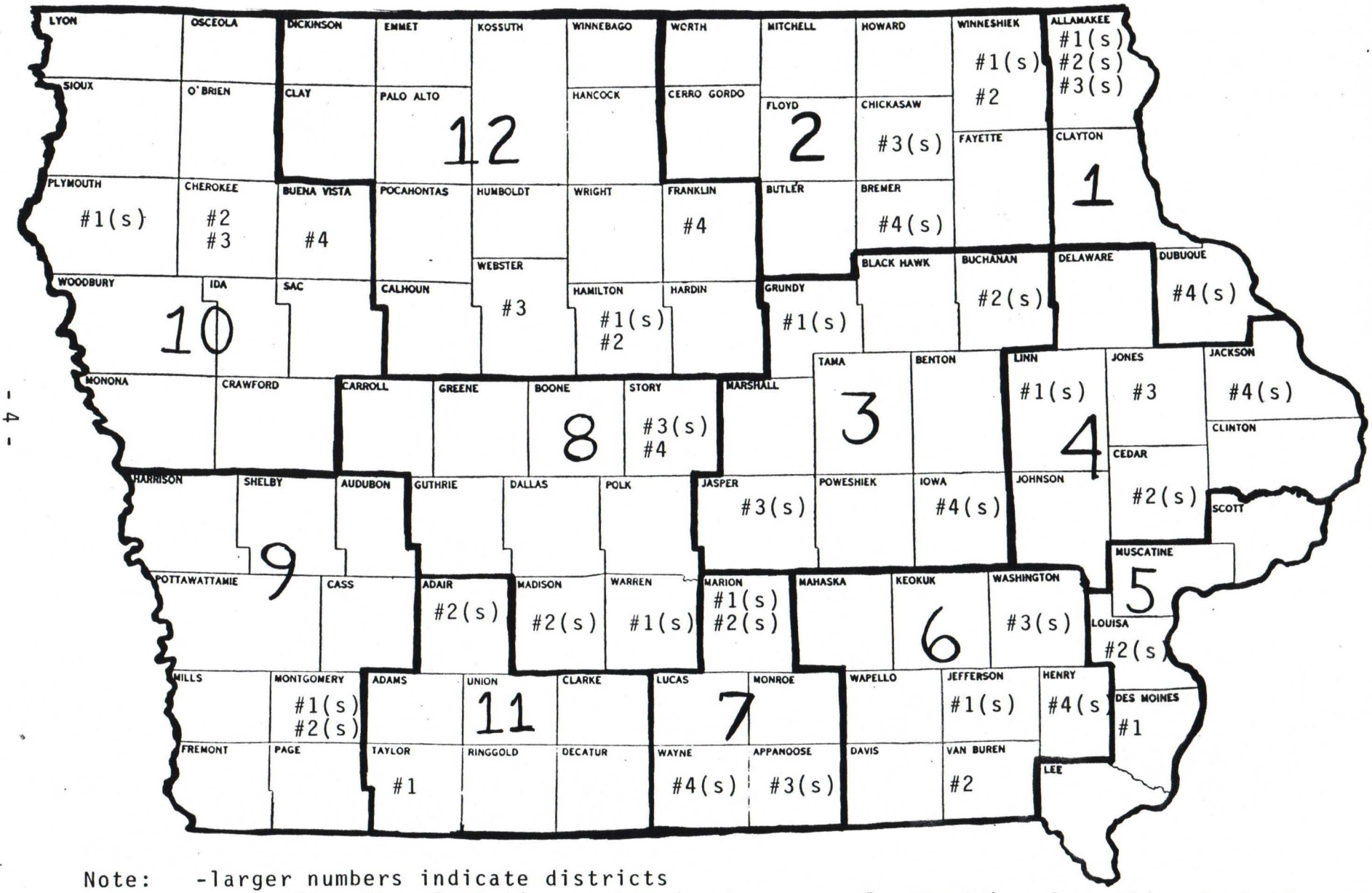
Each of Iowa's twelve districts surveyed four plantations,

Walnut Canker Survey (cont.)

(two upland and two bottomland) except where a shortage of responses from landowners occurred. Stephens State Forest, Yellow River State Forest, and Shimek State Forest also sampled several plantations. At each location, at least 100 trees were sampled, depending on the acreage of the plantation. Trees were chosen randomly and checked for the canker. Where it was found, the size, damage causing it (pruning, etc.), azimuth of its location, whether or not ambrosia beetle holes were found, and any other pertinent information was recorded. Three samples were taken from each affected plantation. At least one plantation was sampled in every district and state forest, and samples were sent to the University of Wisconsin for positive indentification. Whether or not the canker occurs in any of the sample locations was not known at the time of this report.

Very few incidences of the canker occurred in the western parts of the state (Districts 9, 10, 11, and 12) compared to other plantations in the rest of the state. It was found that the canker did occur in greater numbers on bottomland sites, although it was found to occur on upland sites.

LOCATIONS BY DISTRICTS FOR WALNUT CANKER PLANTATIONS



Note: -larger numbers indicate districts
-an s after the plantation number denotes a sample was taken from this plantation

IOWA AERIAL SKETCH MAP SURVEY

During the last week of July and the first week of August, an aerial survey was conducted over the major forested areas of the state. Nearly 12% of the total forest area in the state was covered by this survey. The areas that were mapped included Stephens State Forest, Lacey-Keosauqua State Park, Shimek State Forest, Loess Hills Pioneer State Forest, Waubonsie State Park, Yellow River State Forest, and the Amana Colonies in both Iowa and Johnson counties. The survey was intended to identify areas of decline and death. The results of the survey are listed in Table 1 following, indentifying both the causal agent of the problem and the number of incidents in which it occurred.

TABLE 1: Causal Agents for Aerial Sketch Mapping.

#1-Stephens State Forest (Leroy, Lucas, Derby)

3	Red pine decline
3	Oak wilt
1	Unknown white pine decline
7	Total

#2-Stephens State Forest(Olmitz-Weller)

5	Oak wilt
4	Red pine decline
9	Total

#3-Shimek State Forest (Lacey-Keosauqua)

10	Oak wilt (most of these areas were defoliated early this spring by spring cankerworm)
1	Unknown white pine decline
11	Total

TABLE 1 (cont.)

#4-Shimek State Forest (Farmington-Croton)

2	Oak wilt
2	Dutch elm disease
2	Jack pine decline
3	Red pine decline/Diplodia tip blight

#5-Yellow River State Forest

4	White pine blister rust
3	Oak wilt
3	Bullseye leaf spot on black walnut
2	Dutch elm disease
2	Butternut decline
1	Larch needlecast
1	Fire damage
1	Ash decline

#6-Amana Colonies

7	Oak wilt
2	Dutch elm disease
2	Hypoxylon canker
1	Hackberry decline
1	Hickory decline

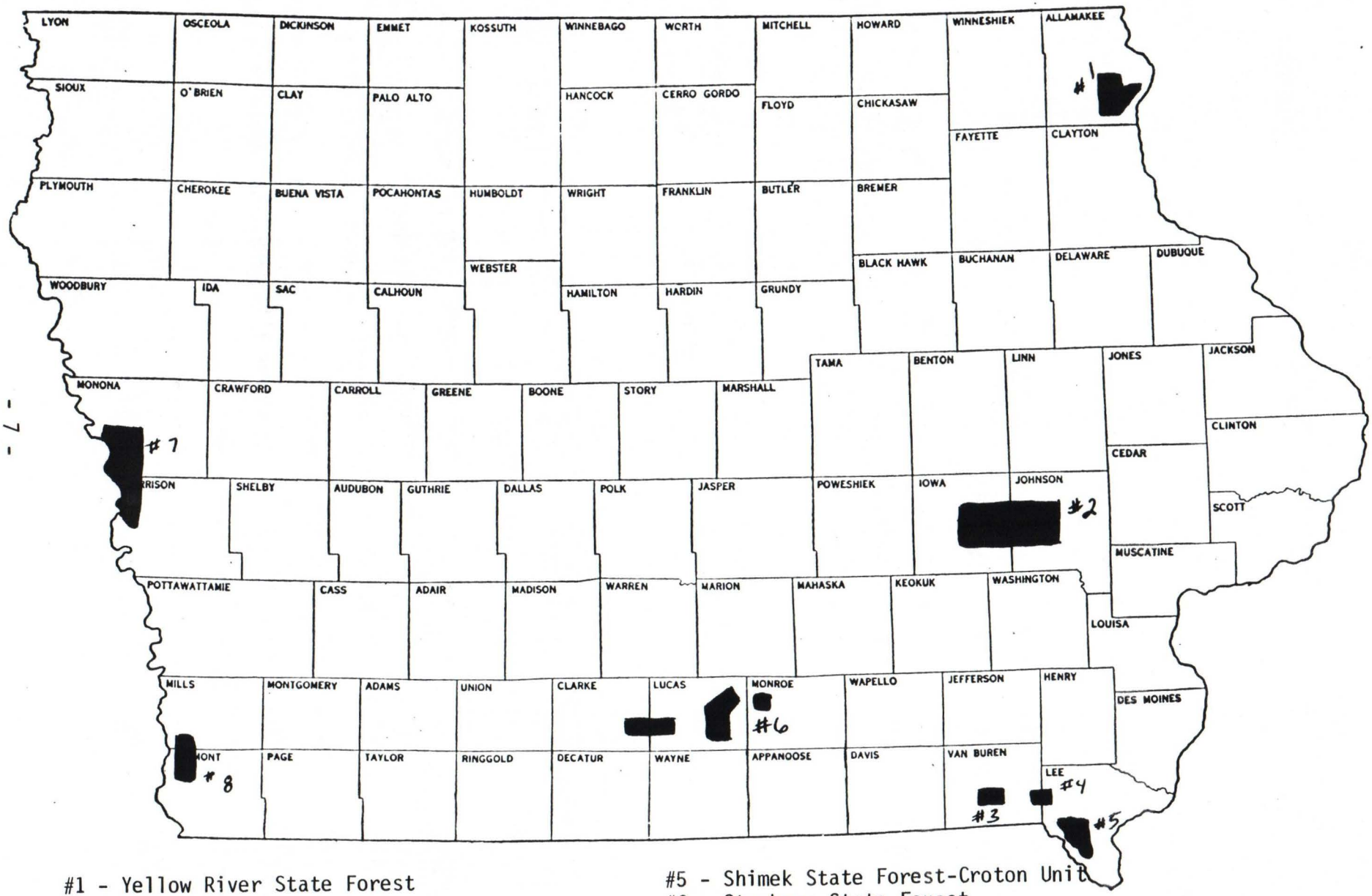
#7-Loess Hills Pioneer State Forest

5	Fire damage
3	Dutch elm disease
2	Ash decline
1	Oak wilt

#8-Waubonsie State Park

10	Oak wilt
1	Ash decline
1	Dutch elm disease

AREAS COVERED BY AERIAL SKETCH MAP SURVEY-1989



#1 - Yellow River State Forest
#2 - Amana Colonies
#3 - Shimek State Forest - Lacey Unit
#4 - Shimek State Forest - Farmington Unit
#5 - Shimek State Forest-Croton Unit
#6 - Stephens State Forest
#7 - Loess Hills Pioneer State Forest
#8 - Waubonsie State Park

FOREST PROBLEMS IN IOWA: 1989

In 1989, Iowa has had very few, if any, major forest problems. However, there have been pests that occurred in numbers significant enough to be noted. The problems following are the major pests causing loss and damage to Iowa's woodlands.

Hardwood diseases

One of the most prevalent diseases occurring in Iowa hardwoods is a wilt fungus called oak wilt, Ceratocytis fagacearum. Species in the red oak group are more susceptible to this vascular wilt disease. Once infected, leaves begin to brown, droop, wilt, and curl, usually starting near the top of the tree and spreading downward. As the disease progresses, whole branches die. Red oaks usually suffer mortality, while white oaks may only suffer branch dieback.

Another vascular wilt disease, Dutch elm disease, affects elms. American elms are more susceptible than other varieties. The fungus, Ceratocytis ulmi, is usually inoculated into the tree by bark beetles. Upon infection, leaves begin to turn yellow and brown, wilt, and fall off. The branch will die and eventually the whole tree. Many elms have been lost to this disease, and it still occurs in existing elms.

A third disease occurs in Iowa's hardwoods. Ash yellows is caused by a mycoplasma-like organism (MLO). Slowed growth is one of the first symptoms seen as a result of infection. The infected tree later shows thinning crowns and pale yellow-green leaves. The outer branches may produce witches'-brooms. Epicormic sprouting usually occurs along the trunk and at the base of the tree 1-3 years after the crown has become leafless.

The fourth and final disease is fairly new to this area. A walnut stem canker, Fusarium sporotrichoides, has been found in plantation black walnut. As mentioned elsewhere in this report, Iowa was involved in a

Hardwood diseases (cont.)

cooperative survey to find out the occurrence and location of the canker in this state. This fungus causes a canker on the trunk that may range from 3 inches to over 8 feet in length. It occurs in greater numbers in valleys and along stream beds. This canker causes great concern because of its potential to decrease the quality of this highly valued wood.

Hardwood Insects

Last year's drought conditions put many of the trees under stress. This made them more susceptible to attack by insects. Although no serious insect problems occur, several insects have been seen in increasing numbers. One such insect, the spring canker worm, Paleacrita vernata, was noted in increased numbers in the southeastern parts of the state. Over 100 acres were defoliated early this spring in Lacey-Keosauqua State Park. Although such a large area was affected, most of the trees refoliated by mid-summer.

A fairly new insect to Iowa, the basswood thrip, Thrips calcaratus, was seen in several locations in northeast Iowa. This defoliating insect is a European species, and its damage is often mistaken for that of the native basswood thrip, Sericothrips tiliae. It emerges from the soil at about the same time as budbreak of basswood. The adults lay eggs on the underside of the leaf, and larvae and adults feed on new leaves causing them to drop. Trees usually refoliate, but repeated defoliations can cause top dieback and tree mortality.

The third insect to be described is the twolined chestnut borer, Agrilus bilineatus. This insect was seen in greater numbers because of its attack on many drought stresses trees. The larvae bore into the inner and outer wood of the tree, sometimes girdling it. Its occurrence is usually scattered, and it rarely attacks large areas at one time.

Conifer Diseases

Few diseases significantly affect Iowa's conifers. There are many conifer diseases present, but few become serious problems. White pine blister rust, *Cronartium ribicola*, was seen in greater numbers this year, especially in the Yellow River State Forest area. Many were more susceptible due to the stressed conditions of last year. The trees are infected by spores from its alternate host, *Ribes sp.* The first most notable sign of infection is branch flagging. Cankers are produced that actually girdle the stem, causing death. Several less notable stages of the disease occur, but flagging and cankers are most evident.

Another problem, red pine pocket decline, was seen on red pine this year. Little is known about the exact cause of the problem. It occurs on all soils in groups or pockets in the stand. Crowns become thin and chlorotic. Several insect and disease species are associated with this decline, but to what extent is not known. They include pine engravers, *Ips pini*; red turpentine beetle, *Dendroctonus valens*; root collar weevil, *Hylobis radicis*; and the fungi *Leptographium sp.* and *Ceratocytis sp.* These may not always be present. This condition may be aggrivated by the dry conditions that have occurred the last two years. Until more is known about this decline problem, little can be done to affected stands.

Several needlecast diseases were seen, affecting mostly conifer plantings (i.e. Christmas tree and windbreaks). This damage was minimal. Several of these include Cyclaneusma needlecast, *Cyclaneusma minus*; Lophodermium needlecast, *Lophodermium pinastri*; and Diplodia shoot blight, *Diplodia pinea*.

Conifer Insects

Insect damage occurring on Iowa conifers this year was considered to be secondary. They invaded stressed trees and trees dying from diseases.

Conifer Insects (cont.)

The two species found throughout the state were Ips sp. and Dendroctonus sp. Signs of these engravers include emergence holes, frass, and boring dust on and around the tree.

CONCLUSION

In conclusion, I would like to thank the Division of Forestry personnel for providing this opportunity. I would also like to thank Roy Hatcher and the district and area foresters for sharing their knowledge and expertise with me. The experience and knowledge that I have gained has been very great.

ADDENDUM
TO
IOWA PEST SURVEY

by

Roy G. Hatcher
Protection Forester

FOREST DISTRICT REPORTS

The following is a listing of the major problems found in the twelve forest districts:

Elkader - A new insect for Iowa was discovered throughout the district, the introduced basswood thrips, Thrips calcaratus. It has been causing extensive defoliation damage to basswood in Wisconsin the past two years as well as in some of the other Lake States. The damage is not extensive so far in Iowa, but we should be aware of its potential damage.

Charles City - The introduced basswood thrips was found in Howard, Fayette and Winneshiek counties in light to moderate severity involving approximately 1,000 acres.

Marshalltown - European pine sawfly severely infested several plantations of Scotch pine in the district. Cytospora canker heavily infested all spruce in the district. Diplodia canker in moderate intensity in white pine in Benton and Marshall counties.

Anamosa - Introduced basswood thrips in moderate intensity on approximately 500 acres in Delaware county. Elm leaf miner and elm leaf beetle in high defoliation on 10,000 acres throughout the entire district. Ash yellows continues from light to heavy severity throughout the district.

Wapello - Elm leaf beetles heavily damaged elm throughout district, approximately 1,000 acres. Spring cankerworm heavily damaged 400 acres of white oak in Henry county, however, 90% of the defoliation refoliated.

Fairfield - No major problems found.

Chariton - Elm leaf beetle damage throughout the district, 25% of elm affected with moderate to heavy damage. European pine sawfly damage was found throughout the district on Scotch pines.

Adel - Elm leaf beetle and miner damage was found throughout the district. European pine sawfly damage was found on Scotch pine throughout the district. Cytospora canker was heavy on spruce in Carroll, Dallas and Polk counties.

Red Oak - No pest report sent in.

LeMars - Elm leaf beetle damage found on elm in several counties, light to heavy damage. Cytospora canker found on most spruces and firs throughout the district. Dothestroma was quite prevalent on Austrian, red and Scotch pines. Diplodia is extensive on ponderosa pine throughout the district.

Creston - No major problems found.

Humboldt - Cytospora canker found throughout the district on all spruce and firs.

GENERAL COMMENTS ON DISTRICT REPORTS

All districts that reported had reports of a variety of routine problems such as aphids, Rhizophaera needle cast, anthacnose, cankerworm and several kinds of borers. All districts that reported indicated drought damage of varying severities. This is primarily a carry over from the 1988 drought. Oakwilt was extensive over the districts and was intensified by the drought stress.

GYPSY MOTH PROGRAM

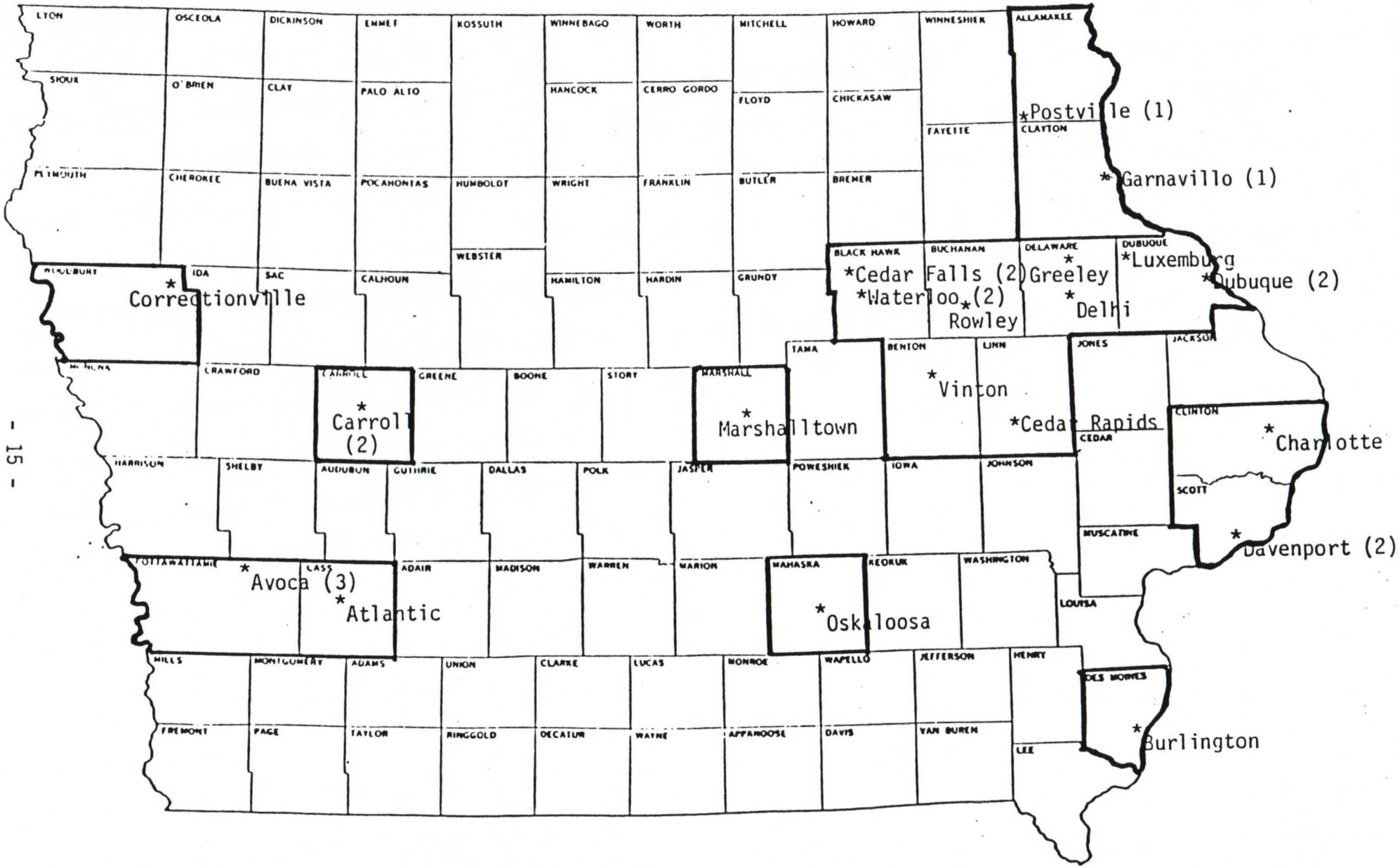
This year was a busy year for gypsy moth in Iowa. There were 2858 traps placed in all 99 counties. We had a record catch of 27 moths in 25 locations in 17 counties. Distribution of sites were from the eastern to western border (map enclosed). All of the catches were new locations. With this increase in catches, up from previous years, we can assume that Iowa will continue to find more moths each year.

Trapping has been generally done in urban and heavily used public areas. In 1990 the trapping may be extended into some rural areas as well.

In May thru June of 1989, three applications of BT were applied to Iowa's first confirmed infestation in the city of Clinton. The area treated was a 9 acre wooded urban area within an 80 acre wooded section of the city. Extra trapping of the area this summer yielded no moths. It appears that the project was successful.

Gypsy Moths Trapped In Iowa

1989



Total Moths Caught	27
Number of Sites	25
Number of Counties	17
Number of Traps Set	2,858 in all 99 counties